

II. REMARKS

A. Introductory Remarks

Reconsideration of this application is earnestly requested. Claims 2-12, 14, 15 and 22-28 are pending in this application. Claims 1 and 24 are amended for clarity.

B. Rejection of Claims 2-5 and 14 Under 35 U.S.C. §103

The Office Action rejected claims 2-5 and 14 as allegedly being obvious over U.S. Patent Application No. 2003/0017785 (“Ueda”) in view of U.S. Patent No. 4,904,634 (“Wieserman”). Applicants respectfully traverse these rejections.

The Office Action admits that Ueda does not disclose “that the chelating compounds may be attached to the spacer, which is different that the chelating compounds and different that the particle.” The Office Action, however, asserts that it would have been obvious to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart. *See* Office Action at pages 2-3.

1. Combination of Ueda and Wieserman does not teach all Limitations of claim 14.

Contrary to the assertion in the Office Action, Applicants respectfully submits that even if there was suggestion or motivation to combine Ueda and Wieserman — which as discussed *infra* there is not— the combination does not teach all elements of the invention of claim 14. Ueda teaches a polishing composition comprising a chelate resin particle and an inorganic particle, wherein the chelate resin particle carries on the surface thereof a polydentate ligand having a plurality of coordinated atoms forming a complex with a metal. *See*, Ueda, paragraphs [0008] and [0012]. Wieserman addresses the problem of improved metal oxide adsorbents by surface bonding it with a monolayer of one or more phosphorous containing organic material. *See* Wieserman at col. 2 lines 30-34. As shown in figure 8 of Wieserman, the organic material forms a monolayer on the surface of the

metal oxide particles. The phosphorous head is attached by a covalent bond to the metal oxide particle, whereas the polymer tail is free and is not attached to another metal oxide particle or chelator compounds. Wieserman defines an “active material” as:

“active material” is intended to define an organic molecule comprising a monomer, oligomer or short chain polymer having a phosphorus-containing group, and preferably at the end of the molecule, capable of bonding to the metal oxide/hydroxide support and having one or more sites thereon, preferably at the opposite end of the molecule, which may be used for the coupling, bonding, or adsorbing, etc. of atoms, ions or other molecules thereto, e.g., when the active material functions as an adsorbent, the active material will have sites available on the molecule to which the material to be adsorbed will be attracted. See, Wieserman col. 4 lines 37-48.

In view of the disclosure of Ueda and Wieserman, the combination of Ueda and Wieserman fails to teach or suggest the following limitations of independent claim 14: 1) chelating particles comprising a particle and a plurality of chelator compounds; 2) wherein the chelating compounds are attached to a spacer, said spacer being different than the chelating compounds and different than the particle; and 3) said spacer being disposed between the chelating particle and the chelating compounds. Nowhere does Ueda or Wieserman teach a plurality of chelator compounds. Additionally, neither Ueda nor Wieserman teaches or suggests that the chelator compounds are attached to a spacer, *which is disposed between the chelating particle and the chelating compounds*. Thus, there is no valid basis to combine Ueda and Wieserman but, even if the references are combined, the Applicants’s invention of claim 14 does not result.

2. No Motivation or Suggestion in Wieserman and Ueda

Further, contrary to the assertion in the Office Action that it would have been obvious to one of ordinary skill in the art to use the spacer as disclosed by Wieserman in the composition of Ueda because Wieserman teaches using it for holding metal oxide particles apart, Applicants submit that Wieserman does not provide any motivation or suggestion to modify or combine his teachings with Ueda for a number of reasons. First, the spacer in claim 14 does not function to hold metal oxide particles apart as suggested by Wieserman because

claim 14 defines a spacer being disposed between the chelating particle and the chelator compounds, which is not structurally or functionally the same thing as Wieserman's "active material." The chelating particle of claim 14 comprises a metal oxide abrasive, iron oxide, and metal alloy particle etc. *See*, instant specification on paragraph [0013]. Further, the chelator compounds of claim 14 may comprise one or more oligomeric and/or (co) polymeric chelators, a cellulose material, copolymers, etc. that possess functional groups as described in paragraphs [0016]-[0017] of the instant specification. The spacer is disposed between the chelating particles (such as metal oxide abrasive) and the chelator compounds, and not between two metal oxide particles as allegedly suggested by Wieserman. Therefore, Wieserman does not teach or suggest a spacer between a chelating particle and chelating compounds as recited in claim 14.

Third, Wieserman is non-analogous art because he does not address the problem of improved chemical mechanical polishing (planarization) CMP compositions and methods thereof. Instead, Wieserman addresses the problem of improved metal oxide adsorbents by surface bonding it with a monolayer of one or more phosphorous containing organic material. *See* Wieserman at col. 2 lines 30-34. Further, Wieserman is concerned with providing the active material suitable for use as an adsorbent at extended pH ranges of 1-14 and insoluble in aqueous media such as in chromatography. *See*, Wieserman, col. 2 lines 40-45. Thus, one of skill in the art who is familiar with Ueda would not look to Wieserman to provide a spacer between a chelating particle and an inorganic particle because Wieserman is not related to the chemical mechanical polishing art.

Fourth, the Office Action implies that one of ordinary skill in the art would look elsewhere for a spacer to hold chelating particles and chelate resin particles apart in Ueda's composition. By turning to Wieserman, the Office Action is disregarding the teaching of Ueda, implying that there is a need or desirability for such a spacer in Ueda's composition. Ueda teaches polishing slurry comprising a chelate resin particle with functional groups and an inorganic particle that can polish metals at high speed. Although Ueda's resin particles have ligands on the surface of the particles, these come about due to milling and polishing of

the particles. See Ueda paragraph [0012]. Thus, the reconstruction in the Office Action ignores Ueda's teaching of using a slurry comprising chelate resin particles without a spacer linking the two particles, suggesting one of skill in the art to merely add a spacer between the inorganic particle and the chelate resin particle. This is contrary to the teaching of Ueda because Ueda teaches that the metal can be polished at high speed even without the need or desirability for a spacer to hold the chelate resin particles and the inorganic particles together. Further, though Ueda's resin particles have ligands on the surface, these come about due to milling and polishing of the particles. The prior art can be modified as *prima facie* obvious as long as there is a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, absent a reasonable expectation of success based on using Weiserman's "active material" in Ueda's composition, the invention of claim 14 cannot be held obvious.

Fifth, in the present case, Applicants contend that the Office Action combines selected portions of Ueda with selected portions of Wieseman in a classic *hindsight* based reconstructions of the invention of claim 14, which is *impermissible*. There is no such motivation to combine Ueda and Wieserman in either of the disclosures and even if the teachings are combined the invention of claim 14 does not result, as discussed *supra*. The Office Action has simply done no more than find the separate similar elements of the Applicants' invention in Ueda and Wieserman and assert that broad disclosures, which require specific selection and experimentation to achieve the invention of claim 14, renders the present invention of claim 14 obvious. If motivation were to exist-*which it does not*-one would not be motivated to select specific examples of Weiserman and use it in combination with Ueda given their distinctly different purposes with the expectation that they would provide the composition of claim 14. Indeed, the statutory standard of 35 U.S.C. §103 is whether the invention, considered as a whole, would have been obvious to one of ordinary skill in the art, not whether it would have been obvious for one of ordinary skill in the art to try various combinations. See, AKZO N.V. v. International Trade Commission, 1 USPQ.2d 1241, 1246 (Fed. Cir 1986). The teaching or suggestion to make the claimed combination and

the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *See, also In re Vaeck*, 947 F. 2d 488, 20 USPQ2d. 1438 (Fed. Cir. 1991).

Therefore, in light of the foregoing discussion, Applicants respectfully submit that an obviousness rejection based on Ueda and Wieserman cannot be maintained and has been overcome. Accordingly, Applicants respectfully request that the obviousness rejection as to claim 14 and as to the corresponding dependent claims 2-5 that incorporate the limitations of claim 14 be withdrawn.

C. Rejection of Claims 6,7, 9-12, 15, and 22-28 Under 35 U.S.C. §103

The Office Action rejected claims 6, 7, 9-12, 15, and 22-28 as allegedly obvious over Ueda in view of Wieserman and further in view of U.S. Patent No. 4,732,887 ("Obanawa"). Specifically, with respect to claims 6, 7, 9-12, 15, and 22-23 and 25-28, the Office Action asserts that it would have been obvious to one with ordinary skill in the art to modify the combined Ueda and Wieserman teachings by using the composite chelating particles as taught by Obanawa in order to efficiently chelate (or adsorb) the metallic residues. *See* Office Action on pages 4-5. Applicants respectfully traverse these rejections.

As indicated by the foregoing, Applicants consider independent claim 14 to define subject matter that is novel and patentable over Ueda and Wieserman. The same conclusion, therefore, applies with respect to the dependent claims 6, 7, 9-12 as these claims depend from claims 14. Therefore, on this basis alone Applicants request withdrawal of this rejection as to these claims.

1. Claim 15 and 24

Additionally, Applicants submit that Obanawa teaches particulate inorganic porous material, and contained in the pores thereof, an organic resin having a micro-void. *See* Abstract. Such composite porous material displays high mechanical strength and exhibit high adsorbing and separating capacity comparable to those of the conventional porous resins. *See* Obanawa col. 2 lines 59-63. Unlike independent claims 14, 15 and 24, the organic resin is not attached to a spacer, which is disposed between the chelating particle

and the chelator compounds. Obanawa teaches that the organic resin may be present on the outer surface of the inorganic porous material. However, these organic resin particles are not held by a spacer between the chelating particles and the chelating compounds.

Further, Applicants submits that the independent claims 15 and 24 define subject matter that is novel and unobvious over the combination of Ueda, Wieserman, and Obanawa because the references either alone or in combination do not teach or suggest all the limitations of independent claims 15 and 24. Specifically, with respect to claim 15, the references fail to teach these limitation: a plurality of chelating particles that are insoluble in water and comprise: a particle body and a plurality of chelator molecules having a plurality of pendant functional groups attached thereto, said functional groups comprising hydroxyls, carboxylic acids, amines, amides, imines, imides, mercaptans, sulfonic acids, hydroxamic acids, carbonyl groups, esters, ethers, ureas, cyano groups, nitro groups, phosphonic acids, phosphonates, carbonates, inorganic salts thereof, or a combination thereof, wherein at least a portion of the functional groups are no further than about 7Å from another functional group, and wherein at least a portion of the chelator molecules having a plurality of pendant functional groups attached thereto are attached to a spacer, said spacer being attached to the particle body, said spacer being different than the chelator molecules and different than the particle body, and said chelator molecules being attached to the spacer.

Similarly, with respect to claim 24, the combination of Ueda, Wieserman, and Obanawa fails to teach the following limitation: a plurality of chelating particles, each chelator particle comprising: a particle body comprising a metal oxide, a plurality of spacer molecules each attached by a covalent bond to said particle body, and a chelator compound attached by a covalent bond to said spacer molecule, wherein the spacer molecule is not the chelator compound. Thus, Applicants respectfully submits that there is no valid basis to combine Ueda, Wieserman and Obanawa but, even if the references are combined, the Applicants' invention of claim 15 and 24 does not result. Accordingly, Applicants respectfully requests withdrawal of this rejection.

Further, Applicants submit that Obanawa does not suggest a spacer as defined in claims 15 and 24 where the chelator compound is attached to the spacer. As discussed in section B, Ueda and Wieserman do to teach or suggest a spacer between a chelating particle and chelator compounds. Further, Obanawa does not remedy this deficiency of Ueda and Wieserman because Obanawa's particles is not contemplated to be used in chemical mechanical polishing art. Rather, Obanawa is concerned with composite porous material comprising a particulate inorganic porous material and, contained in the pores thereof, an organic resin having a micro-void, and a process for producing the composite porous material for use in chromatographic separation. See Obanawa col. 1 lines 8-15. The particles of Obanawa are described as "exhibiting high separation and adsorbing capacity" when used in the chromatographic separation of certain chemicals when packed in a chromatography column.

Thus, Obanawa does not provide the motivation or suggestion to modify the teaching of Ueda. Further, as discussed *supra*, there is no need or desirability for a spacer to hold together the inorganic particles and the chelate resin particles in Ueda's composition, and therefore there is no reasonable expectation of success in using Wieserman's active material in Ueda's composition with Obanawa's chelating compounds. For at least these reasons, Applicants submit that claims 15 and 24 define subject matter that is novel and unobvious over Ueda, Wieserman, and Obanawa. Accordingly, Applicants requests withdrawal of the obviousness rejection as to these claims and to the corresponding dependent claims that depend therefrom.

2. Claims 6 and 15

With respect to claims 6 and 15, the Office Action asserts that since the compound is used as a chelating agent, it is expected that the distance between two functional groups are adjusted so as to efficiently chelate the metallic residues depending on the product requirement and therefore it is merely a matter of choice of design depending on the product requirement. In response, Applicants submit that the routine experimentation could not be used to optimize the chelating efficiency because the prior art references of Ueda, Wieserman,

and Obanawa alone or in combination do not teach or suggest this particular limitation of “wherein at least a portion of the functional groups are no further than about 7Å from another functional group.” Absent a reasonable expectation of success based on Ueda, Wieserman, and Obanawa, the invention of dependent claim 6 and 15 cannot be held obvious.

The fact that a claimed product is within a broad field of prior art and one might arrive at it by selecting specific items and conditions, does not render the product obvious in the absence of some directions or reasons in the prior art for making such selections. (Ex Parte Kuhn, 132 U.S.P.Q. 359 (1961). Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from their combined teachings. In re Sernaker, 217 U.S.P.Q. 1, 6 (Fed. Cir. 1983). One simply cannot pick and choose among individual parts of assorted references to form a mosaic to recreate a facsimile of the claimed invention. AKZO N.V. v. International Trade Commission, 1 USPQ.2d 1241, 1246 (Fed. Cir 1986). Uniroyal v. Rudkin-Wiley, 5 USPQ. 2d 1434, 1438 (Fed. Cir. 1988). Applicants respectfully submit that claims 6 and 15 specifically define a length of the spacer that is not taught or suggested by the prior art. Accordingly, Applicants request withdrawal of the rejection as to claims 6 and 15.

Applicants respectfully submit that the same conclusion applies to claims 10, 11, 22, 25, 27 and 28 as these claims depend from independent claims 14, 15, and 24, which are allowable.

3. Claim 22

With respect to claim 22, the Office Action asserts that the Examiner takes notice that dependent claim 22 differs from the combined prior art by specifying well-known features (such as chelating compound having at least three sulfonic acid groups) to the art of polishing and wet etching. Further, the Office Action asserts that it is the Examiner’s position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the combined prior art by adding any of same or well-known features to same in order to efficiently chelate the metallic residues with a reasonable expectation of success. *See* Office Action on page 6.

In response, Applicants submit that the prior art references do not teach, suggest, or provide the motivation to modify the teachings therein to arrive at the invention of claim 22. Claim 22 depends from claim 15 and incorporates all the limitation of claim 15. The limitations of claim 15 is not taught or suggested in the prior art references. Further, with respect to dependent claim 22, there is no reasonable expectation of success for one of ordinary skill in the art to choose *at least three sulfonic acid groups* as functional groups and attach a spacer between the chelating particles and the chelator compounds by a covalent chemical bond. Such inventive insight is only possible with the benefit of hindsight provided by Applicants' own disclosure. Accordingly, Applicants submit that dependent claim 22 is allowable and requests withdrawal of this rejection.

D. Conclusion

Since claims 14, 15, and 24 define subject matter that is non-obvious over Ueda, Wieserman, and Obanawa cited in the Office Action and there is no motivation or suggestion to modify any of the references, the obviousness rejections are overcome. Accordingly, Applicants request reconsideration and allowance of independent claim 14, 15, and 24 including the dependent claims that depend therefrom, as these dependent claims incorporate all the limitations of the independent claims.


III. Request for Allowance

In view of the amendments and arguments presented above, all claims are now thought to be in condition for allowance, an indication of which is solicited. In the event that any issues remain outstanding, Applicants would appreciate the courtesy of a telephone call to the undersigned to resolve such issues in an expeditious manner so as to place this application in condition for allowance.

No additional fees are believed necessary, other than the co-filed separate extension of time. In the even other fees are necessary, the Commissioner is hereby authorized to charge such fees, or credits, to Morgan, Lewis & Bockius Deposit Account no. 50-0310.

Respectfully submitted,

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